Michael Halcrow

Engineering Manager, Security.

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Overview

I seek a leadership opportunity applying deep security expertise to unique challenges.

I am currently the Engineering Manager of the Container Threat Detection product team at Google. I hired and led a team of software developers to create a new enterprise security product in Google's Cloud Security organization. My team shipped its Beta product in May 2020.

I have 20 years of experience in the security industry. My most noteable accomplishments include eCryptfs and fs-crypt, both of which are part of the upstream Linux kernel. My technology was central in Google's effort to encrypt billions of Android devices across the globe, closing a major competitive gap with the Apple iPhone.

I thrive in ambiguity and relish opportunities to lead the industry in whatever challenge I take on.

Employment History

Google, 2011-present

Kirkland, WA

Founding Member of the Google Cloud Platform (GCP) Security Organization.

Container Threat Detection

Staff Engineering Manager

- I built the team from scratch, hiring on 9 new employees from outside the company and transferring in 3 employees from other teams at Google. I established the team's engineering culture, drove execution, gave career guidance, and navigated the team through the COVID-19 crisis to ship our Beta product in record time, moving from concept and no headcount to delivery with 12 employees in about 18 months.
- I demonstrated adaptability in managing a disparate group of software engineers, including 1 new hire straight out of college, 4 junior professional hires, 2 experienced professional hires, 2 internal transfers, and 3 engineers with doctorates in security and ML.
- I designed the kernel instrumentation and the Google service framework, and I led my team's execution on an ambitious vision.
- I led Machine Learning experts on my team to produce novel techniques in the threat detection domain.

fs-verity

Staff Technical Lead Manager

- I wrote the initial prototype of fs-verity and led my team to drive the implementation through to merging into the upstream Linux kernel. The fs-verity feature now protects the integrity of sensitive apps on Android.

fs-crypt

Senior Software Engineer

- I proposed the fs-crypt project, wrote the design, and wrote the majority of the implemention together with Ted T'so, a well-known core Linux kernel maintainer. I engaged the Android team at Google to ensure that fs-crypt met platform requirements, extended fs-crypt to support Inline Cryptographic Engine (ICE) technology that's part of the ARM ecosystem, and worked with engineers in the Android organization to ship Android N with storage encryption enabled by default.
- fs-crypt also protects user data on Chrome OS and sensitive data on Google's production infrastructure.

Cloud KMS
Senior Software Engineer

- I conceived the Google Cloud Key Management Service (KMS) project and proposed the initial design. I transitioned the project to another team that specializes in key management, and they drove it to commercial success.

Customer-supplied Encryption Keys
Senior Software Engineer

- I led the design and implementation of Customer-supplied Encryption Keys (CSEK) on Google Compute Engine.

Compute Engine Persistent Disk Encryption
Software Engineer III

- I proposed, designed, and implemented storage encryption as an always-on feature of Google Compute Engine's Persistent Disk, which was an industry-first accomplishment in the Cloud space. I applied AEAD encryption to block storage while meeting consistency and performance requirements, which is a notable technical achievement.

Microsoft, 2009-2011
Redmond, WA

Windows Division, BitLocker
Senior Software Engineer

- I delivered passphrase-based system volume protectors for the BitLocker Full Disk Encryption feature, unblocking a significant number of enterprise customers so they can use Windows-native disk encryption technology.
- I performed static code analysis of the Windows code base.

IBM, 2003-2009
Austin, TX

Linux Technology Center, Security
Software Engineer

- I created eCryptfs. For many years eCryptfs protected storage on consumer devices such as Synology NAS, and at least one startup, Gazzang, based its core product offering on eCryptfs.
- I wrote extensive detailed documentation of low-level Linux system call interfaces, which was critical to achieve the world's first Common Criteria certification of a Linux distribution (RHEL).

Education

Master of Science in Computer Sciences (**MSCS**), UT Austin, 2007.

Bachelor of Science in Computer Engineering (BSCE), BYU, 2002.

Miscellaneous

I help instruct Google's internal Interview Training Workshop, where I prepare new employees to conduct interviews at Google. I'm also a leading interviewer in my organization, and I'm frequently called upon to interview Product Managers, Engineering Managers, Software Engineers, Test Engineers, and Technical Program Managers.

I am an inventor on 15 issued patents.

I have made multiple external presentations at the Linux Security Summit (LSS) and the Ottawa Linux Symposium (OLS).

I lead Google's internal bicycling forum for the Seattle area, coordinating rides, giving presentations, and facilitating engagement with charity events.

Keywords

Security, Privacy, Data Protection, **Storage Encryption**, Applied Cryptography, Key Management, KMS, Linux, File Systems, Operating Systems, Containers, Docker, Kubernetes, **Threat Detection**, Scrum, Agile, Engineering Management, C, C++, Python, Go, Machine Learning, ML